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REMARKS

Claims 1 to 7 stand rejected under 35 USC §103(a) as unpatentable over applicant's statement of the prior art in the specification or Ravindranathan in combination with Jones.

The method of claim 1 includes the following steps **before forming metal terminals on either end of the varistor.**

(a) applying and depositing a phosphate compound on a surface of the body, wherein an over-saturated phosphate liquor is kept at a high temperature to deposit the phosphate compound on the surface of the body; and

(b) Heating the phosphate compound on the surface **until the phosphate compound turns to a transparent element.**

In contrast, at col. 3, lines 6-14 Ravindranathan discloses only the following steps:

(a) Providing a phosphoric acid solution. The phosphoric acid solution is heated and stirred and is composed of the 85wt% orthophosphoric acid and 50% deionized water.

(b) Forming the layer (34) on the varistor body by submerging the varistor body in the phosphoric acid solution at 75°C. The varistor body is first washed and dried before being submerged in the solution.

(c) Cleaning and drying the body with the layer. The dried temperature is about 100°C. Neither the prior art in the specification of the current application nor Ravindranathan in combination with Jones is seen to disclose the use of over-saturated phosphate liquor in applying the phosphate compound on the surface of the body, as set forth in claim 1. Nor do the references of record disclose the step of heating the phosphate compound until it becomes transparent, as set forth in claim 1. Neither individually nor in combination do the two cited references render claim 1 unpatentable.

The heating step of claim 1 is not the same as the drying step of Ravindranathan. When the phosphate compound is heated to become **transparent**, as called for in claim 1, the temperature must be larger than 500°C. In contrast, the drying temperature of Ravindranathan is only about 100°C. Moreover, the purpose of the drying step is only to keep the body with the phosphate layer dry. Applicant has found that when the phosphate compound is heated to turn transparent, the anti-etch capability of the phosphate compound is greater than that of Ravindranthan and the phosphate compound on the surface of the varistor is not stripped off in the plating process. Ravindranathan's phosphate layer on the surface of the varistor could be stripped off.

With regard to claims 2 to 4, neither Ravindranathan nor Jones discloses or teaches a removing transparent element step, a forming protective coating step or both steps. Claims 2 to 4 are therefore patentably distinct from the art of record.

Further, claims 5 to 7 are dependent on claim 1. Since claim 1 is patentable, claims 5 to 7 are also patentable. Finally, since claims 1-6 are generic with claims 7, 15, 16 and 17 and are patentable, claims 7 and 15-17 should be patentable.

To clarify differences between the fabricating methods set forth in claim 1, and those of Ravindranthan, the applicant performed an experiment and has prepared Comparison Photographs, attached hereto as Exhibit A, and a Comparison List, attached hereto as Exhibit B, for the two fabricating methods. The experiment was based on the following:

(1) Sample name: Varistor

Sample provider: Thinking Electronic Industrial Co., Ltd.

Sample size: L x W = 22mil x 20mil

Quantity: 20,000 pcs

(2) Characteristic of Sample

Normal varistor voltage (the value at 1mA): $V_{1mA}(V)=39\pm10\%$

Nonlinear coefficient: $a > 20$

Leakage current: $1_{1.}(\mu A)<20(atV_{1X}=31V)$

Capacitance: $C_p(PF)=4100 \pm 20\%$

(3) Purpose

Comparison between the anti-etch capabilities between the current application and the cited '074 reference.

(4) Equipment

Heater/Drying Oven/Conveyor Furnace/Plating Tough

(5) Flow Chart

a. Initial process including forming phosphate layer, cleaning, drying etc. steps

b. Half quantities of the samples are heated at a temperature of 500°C.

c. Barrel nickel/tin plating all quantities of the samples.

d. Photographing some samples respectively plated by nickel and tin. One picture shows three nickel plated samples with the heated process and three nickel plated samples without the heated process. The other picture shows three tin plated samples with the heated process and three tin plated samples without the heated process. The two pictures are made for the Comparison Drawing.

e. Obtaining 40 samples to measure their electric characteristics, wherein

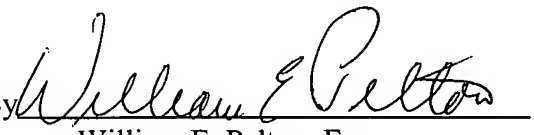
half of the 40 samples are heated and the other half are not. The measurement results are included in the Comparison List.

With reference to the Comparison Photographs, the heating picture shows that with the heating step of the present invention only the two ends of each sample are plated with nickel or tin, but without the heating step the body and two ends of each sample are plated. Moreover, as shown in the Comparison List, the samples with the heated process have electric characteristics. No electric characteristics were measured in the samples prepared without the heated process since the two ends are shorted during barrel plating step. Applicant's method step of heating the phosphate compound until it becomes transparent, as set forth in claim 1, therefore is shown to protect the varistor because the metal is kept from being plated on the surface of the body during the plating process.

As a result of the foregoing, applicant submits that claims 1-7 and 15-17 are in condition for allowance and such action is respectfully requested. If any points remain in issue, which the Examiner feels would best be resolved by either a personal or a telephone interview, he is urged to contact Applicant's attorney at the exchange listed below.

Dated: June 30, 2004

Respectfully submitted,

By 

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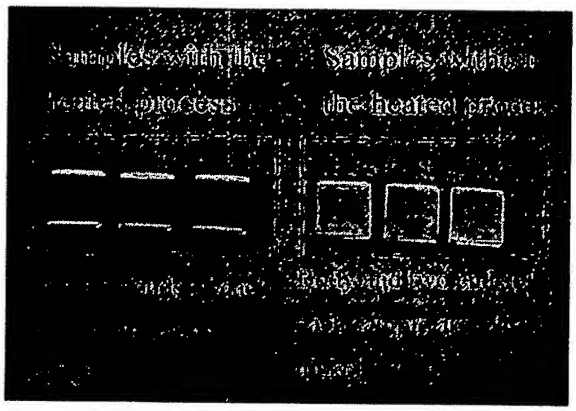
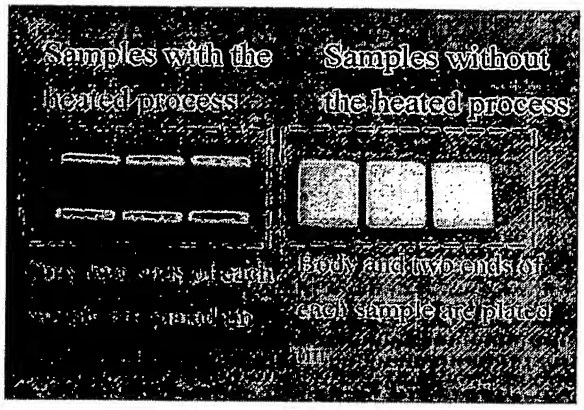


Picture 1. Samples are plated nickel in barrel plating step



Picture 2. Samples are plated tin in barrel plating step

Comparison Drawing

Varistor electric characteristics								
Type length*width=22mil*20mil					Measurement date 05/04/2004			
NO.	Sample with the heated process				Sample without the heated process			
	$V_{1mA(V)}$	α	$I_L(\mu A)$	C_P(pF)	$V_{1mA(V)}$	α	$I_L(\mu A)$	C_P (pF)
1	39.31	41.40	0.57	3414.00	N.D.	N.D.	N.D.	N.D.
2	39.47	44.70	0.64	3371.00	N.D.	N.D.	N.D.	N.D.
3	37.87	40.10	1.65	3473.00	N.D.	N.D.	N.D.	N.D.
4	38.55	39.20	0.71	3383.00	N.D.	N.D.	N.D.	N.D.
5	38.83	38.70	0.32	3426.00	N.D.	N.D.	N.D.	N.D.
6	38.65	45.70	0.61	3426.00	N.D.	N.D.	N.D.	N.D.
7	39.08	46.30	0.48	3429.00	N.D.	N.D.	N.D.	N.D.
8	39.05	44.20	0.71	3359.00	N.D.	N.D.	N.D.	N.D.
9	39.14	42.40	0.32	3363.00	N.D.	N.D.	N.D.	N.D.
10	39.03	43.20	0.37	3419.00	N.D.	N.D.	N.D.	N.D.
11	38.82	43.00	0.69	3409.00	N.D.	N.D.	N.D.	N.D.
12	39.22	45.90	0.64	3523.00	N.D.	N.D.	N.D.	N.D.
13	38.63	44.20	0.52	3404.00	N.D.	N.D.	N.D.	N.D.
14	38.15	45.70	0.94	3538.00	N.D.	N.D.	N.D.	N.D.
15	37.01	35.80	1.20	3466.00	N.D.	N.D.	N.D.	N.D.
16	39.10	48.50	0.35	3399.00	N.D.	N.D.	N.D.	N.D.
17	38.95	45.60	0.65	3411.00	N.D.	N.D.	N.D.	N.D.
18	38.57	46.70	0.54	3491.00	N.D.	N.D.	N.D.	N.D.
19	38.34	47.00	0.45	3532.00	N.D.	N.D.	N.D.	N.D.
20	39.46	48.50	0.36	3377.00	N.D.	N.D.	N.D.	N.D.
Ave.	38.76	43.84	0.64	3430.65	-	-	-	-
s	0.59	3.39	0.32	55.47	-	-	-	-
cv%	1.52	7.74	50.60	1.62	-	-	-	-
max.	39.47	48.50	1.65	3538.00	-	-	-	-
min.	37.01	35.80	0.32	3359.00	-	-	-	-

N.D. : Non-detectable (the two ends are shorted) .

Comparison List